

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
MASAKAZU FUNAHASHI : EXAMINER: Dawn L. Garrett
SERIAL NO.: 10/549,801 :
FILED: November 21, 2005 : GROUP ART UNIT: 1786
FOR: AROMATIC AMINE DERIVATIVE AND ORGANIC
ELECTROLUMINESCENT ELEMENT MADE WITH THE SAME

DECLARATION UNDER 37 C.F.R. § 1.132

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

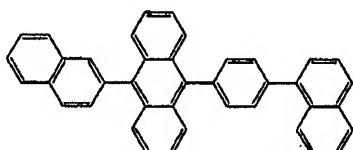
- I, Masakazu FUNAHASHI, of c/o Idemitsu Kosan Company Limited,
1-1, Marunouchi 3-Chome, Chiyoda-Ku, Tokyo, Japan, declare that;
1. I graduated from Tokyo Institute of Technology with a master's degree in March, 1993 and have been employed by Idemitsu Kosan Co., Ltd. since April, 1993, where I have engaged in research and development of electroluminescence devices and materials at Central Research Laboratory since June, 1993.
 2. I am a sole inventor of the above-identified U.S. Patent Application and familiar with the subject matter disclosed therein.
 3. I have reviewed Office Action mailed December 21, 2010, and note that

the Examiner rejects claims 2, 5, 8, and 10–17 of the above-identified application over Oh et al. (US 2003/0118866 A1) and claim 18 over Oh et al. in view of Hoag et al. (US 6,661,023).

4. I have conducted the experiments to examine whether the lifetime of organic electroluminescence device is improved by a diphenylaminopyrene compound which has two or more substituents on at least one benzene ring of its diphenylamino group.

EXPERIMENT 1

An organic electroluminescence device was produced in the same manner as in Example 1 of the present specification except for using compound (52) in place of compound (12) and using the following compound:



in place of 10, 10'-bis[1,1',4',1"]terphenyl-2-yl-9,9'-bianthracenyl.

Upon passing electric current through the obtained organic electroluminescence device, a blue light emission with a luminance of 978 cd/m² (emission maximum wavelength: 477 nm) occurred at a voltage of 6.9 V and a current density of 10 mA/cm². The half lifetime of the obtained organic electroluminescence device was 3000 h when measured by continuously passing DC electric current at an initial luminance of 3000 cd/m².

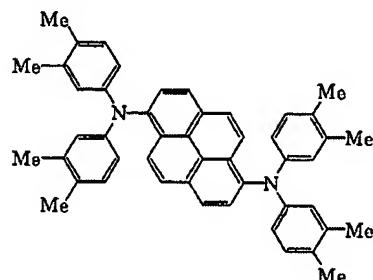
EXPERIMENT 2

An organic electroluminescence device was produced in the same manner as in Experiment 1 except for using compound (54) in place of compound (52).

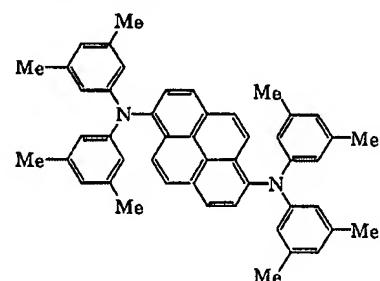
Upon passing electric current through the obtained organic electroluminescence device, a blue light emission with a luminance of 902 cd/m² (emission maximum wavelength: 472 nm) occurred at a voltage of 6.8 V and a current density of 10 mA/cm². The half lifetime of the obtained organic electroluminescence device was 1900 h when measured by continuously passing DC electric current at an initial luminance of 3000 cd/m².

The results of Experiments 1 and 2 are shown in the following table.

Compound (52)



Compound (54)



Experiments	Voltage (V)	Current density (mA/cm ²)	Luminance (cd/m ²)	Emission maximum (nm)	Half lifetime (h)
1	6.9	10	978	477	3000
2	6.8	10	902	472	1900

5. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed

to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: MAY 06 2011

Masakazu Funahashi
Masakazu FUNAHASHI